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Antibiotics Tested for Preserving Foods:

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First results of research on a new method of food preservation, using antibiotics, were announced today by scientists of the U. S. Department of Agriculture's Bureau of Agricultural and Industrial Chemistry.

In their tests canned vegetables were sterilized by adding very small amounts of an antibiotic and then giving the sealed cans a relatively mild heat treatment. This procedure proved as effective for destroying bacteria and other food-spoiling organisms as conventional canning methods, which require more severe cooking.

The process is still experimental, says Dr. G. E. Hilbert, chief of the Bureau. Several years of work will probably be necessary, he points out, before the new method's suitability for use in canning or other food-preserving techniques is known. One particularly important question -- whether the antibiotics, as used, are toxic to man -- can be answered only after long and careful investigation.

But if further trials confirm the preliminary findings and reveal no major new difficulties, it is possible that this method will eventually lower canning costs and make some canned foods more appetizing.

Studies so far show that canning vegetables with antibiotics, compared with ordinary canning, permits sterilizing the cans with heat more rapidly, at lower temperatures, and without pressure-cooking equipment. The antibiotics used do not affect the taste of the food, and since only a mild heat treatment is required the final products have better flavor than conventionally canned vegetables. All these factors contribute to the potential economic importance of the new process.

Research on this food-preserving method is under way at the Bureau's Western Regional Research Laboratory in Albany, Calif. The initial progress report was made by Drs. Ariel A. Andersen and H. David Michener.

In most of the tests so far the antibiotic used was subtilin, a discovery of the Western Laboratory. This substance is produced in submerged fermentation by one strain of a bacterium (Bacillus subtilis) which occurs widely in nature and normally exists in many food products. The Laboratory scientists also had promising results in limited experiments with aureomycin, chloromycetin, and lupulon. (Lupulon is an antibiotic recently isolated from hops by researchers at the Western Laboratory).

Peas, asparagus, and corn were the vegetables used in the studies so far reported. Some preliminary work has been done also on corn, green beans, peeled potatoes, tomato juice, and milk.

A brief heat treatment (at 212° F. or lower for 5 or 10 minutes) is necessary in vegetable canning to inactivate enzymes which otherwise cause food to spoil. This treatment also destroys yeasts and fungi and all non-spore-forming bacteria. Some of these organisms are resistant to antibiotics.

Other food-spoiling organisms, chiefly the spore-forming type, are resistant to mild heat but can be easily controlled with antibiotics. In ordinary canning they are destroyed by cooking at high temperatures (up to 240° F. or even higher). This is ordinarily done in pressure cookers. Sterilization takes 30 to 60 minutes or longer, depending on the vegetable being canned, size of container, the heat and pressure applied, and other factors. The experiments indicate that use of antibiotics may make this longer, more severe heat treatment unnecessary.

In the Laboratory's tests subtilin was dissolved in a 2-percent salt solution and added to the canned vegetables under vacuum. The antibiotic was used in extremely minute quantities -- at concentrations of about 10 parts per million, based on the weight of the canned material.